
Pluripotent human stem cells for the treatment of retinal disease.

Journal: J Cell Physiol

Publication Year: 2011

Authors: T J Rowland, D E Buchholz, D O Clegg

PubMed link: 21520078

Funding Grants: Training Program in Stem Cell Biology and Engineering, UCSB Stem Cell Biology Training Program

Public Summary:

Despite advancements made in our understanding of ocular biology, therapeutic options for many debilitating retinal diseases remain limited. Stem cell-based therapies are a potential avenue for treatment of retinal disease, and this minireview will focus on current research in this area. Cellular therapies to replace retinal pigmented epithelium (RPE) and / or photoreceptors to treat age-related macular degeneration (AMD), Stargardt's macular dystrophy, and retinitis pigmentosa are currently being developed. Over the past decade, significant advancements have been made using different types of human stem cells with varying capacities to differentiate into these target retinal cell types. We review and evaluate pluripotent stem cells, both human embryonic stem cells and human induced pluripotent stem cells, as well as protocols for differentiation of ocular cells, and culture and transplant techniques that might be used to deliver cells to patients.

Scientific Abstract:

Despite advancements made in our understanding of ocular biology, therapeutic options for many debilitating retinal diseases remain limited. Stem cell-based therapies are a potential avenue for treatment of retinal disease, and this minireview will focus on current research in this area. Cellular therapies to replace retinal pigmented epithelium (RPE) and / or photoreceptors to treat age-related macular degeneration (AMD), Stargardt's macular dystrophy, and retinitis pigmentosa are currently being developed. Over the past decade, significant advancements have been made using different types of human stem cells with varying capacities to differentiate into these target retinal cell types. We review and evaluate pluripotent stem cells, both human embryonic stem cells and human induced pluripotent stem cells, as well as protocols for differentiation of ocular cells, and culture and transplant techniques that might be used to deliver cells to patients. J. Cell. Physiol. (c) 2011 Wiley-Liss, Inc.

Source URL: <https://www.cirm.ca.gov/about-cirm/publications/pluripotent-human-stem-cells-treatment-retinal-disease>